

NOTES ON THREE SPECIES OF *ALEOCHARA*  
(s.g. *COPROCHARA* MULSANT & REY) (COL.: STAPHYLINIDAE),  
INCLUDING TWO NEW TO BRITAIN

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*COPROCHARA* is a sub-genus of *Aleochara* containing species with an unpunctured corridor on the dorsum of the pronotum, defined on either side by a row of punctures. Most members of the sub-genus also have a conspicuous red area in the rear half of the elytra. *A. bilineata* (Gyllenhal) and *bipustulata* (L.) have long been recognised as British members of the sub-genus. Another species, *verna* (Say), has more recently been reported to occur in Britain (Welch, 1969) but there is now evidence, which indicates that the specimen was, in fact, an example of *binotata* Kraatz (see also Welch, 1990).

Lohse (1989) has presented a revised interpretation of the central European members of the sub-genus with red areas on the elytra. I have examined carefully my relevant British material in the light of this revision and conclude that it comprises three species. The evidence for this and a discussion of the identity of the species form the substance of these notes.

Evidence for three species

Apart from varying in size, the 44 specimens are externally fairly uniform in their appearance which takes the form of a small shiny black *Aleochara* with (except in one) an obvious red area on the hinder half of each elytron and with appendages black or dark brown except for the tarsi which are lighter.

The data on which the specimens have been separated into three groups (species A, B and C) are summarised in Table 1. Length was taken as the distance between the insertion of the antennae and the rear end of the abdomen. Measurements of length were made on dried specimens mounted on card and no doubt were affected by variable mounting and variable contraction of the abdomen in the dried material but at least all the specimens were measured in the same state.

All specimens had the aedeagus or spermatheca extracted and displayed. All the aedeagi had the same general form (fig. 1). The length of the central lobe was taken as the distance from the end of the bulb to the point of the apex and the height of the "arch" was taken as the distance from the top of the arch to an imaginary tangent to the base passing through the point of the apex. A higher arch/length ratio thus indicated a more strongly arched shape. The degree of narrowing of the central lobe towards the apex, viewed ventrally, was expressed as the ratio of the width (a) at a point two-thirds of the distance between the bulb and the apex to the width (b) of the bulb (fig. 1) — the lower this ratio (a/b), the more the

**Table 1. Data relating to author's material.**

Measurements were made on all specimens except where noted and these and ratios are expressed as means with range in parentheses. Where necessary, see text and figures for explanations.

Comparative descriptions relate to species A.

	SPECIES A	SPECIES B	SPECIES C
No. of specimens	20 males, 9 females	3 males, 3 females	7 males, 2 females
Length (mm)	3.9 (3.1 - 4.6)	3.8 (3.6 - 4.2)	3.0 (2.7 - 4.0)
Antennal joints 8 - 10	—	less transverse	more transverse
Pronotum			
serial punctures	not sunk in impression	not sunk in impression	sunk, deeply in some
micropunctures	scarcely detectable	distinct but very fine	scarcely detectable
head/pronotum breadth ratio	0.66 (0.63 - 0.69)	0.67 (0.66 - 0.71)	0.72 (0.69 - 0.74)
Elytra			
punctures	weakly crescent-shaped with arms in direction of outer angles of elytra	deeper but round	more diffused but round
red area	—	relatively smaller	relatively smaller
Aedeagus — central lobe			
length (mm)	0.49 (0.44 - 0.55)	0.52 (0.50 - 0.53)	0.42 (0.40 - 0.43)
arch (mm)	0.11 (0.10 - 0.13)	0.15 (0.14 - 0.15)	0.12 (0.11 - 0.13)
arch/length ratio	0.22 (0.19 - 0.25)	0.29 (0.28 - 0.30)	0.29 (0.26 - 0.31)
narrowing factor	0.44 (0.4 - 0.5), n = 6	0.53 (0.5 - 0.6), n = 3	0.59 (0.5 - 0.6), n = 3
Spermatheca			
shape of coil	cylindrical	truncate fusiform	truncate fusiform
turns in coil	2.5 (2 - 3)	9.5 (8 - 11)	9 (8 - 10)

narrowing towards the apex. The spermathecae likewise were all of the same general form, differing basically only in the shape and number of turns of the coil in the duct (fig. 2).

The data presented in Table 1 indicate that each of the three species had one or more external features not found in either of the other two species. Thus, in species A, the elytral punctures are weakly crescent-shaped whereas, in species B and C, they are round. In species B, the dorsum of the pronotum shows obvious fine but distinct micropunctures which are scarcely detectable in the other two species. In species C, the row of punctures on the dorsum of the pronotum is depressed whereas, in the other two species, the surface around the punctures is level with the rest of the nearby surface.

Measurements behaved similarly. For example, in all 20 males of species A, the central lobe arch/length ratio was lower than in any of the males in species B or C, i.e. the central lobe was consistently more weakly arched; further, none of the nine females of species A had more than three turns in the spermathecal coil whereas the other females all had eight turns of more. In species B, the absolute height of the central lobe arch was higher than in any of the males of species A or C. In species C, the length of the central lobe showed no overlap with the corresponding measurement in species A or B.

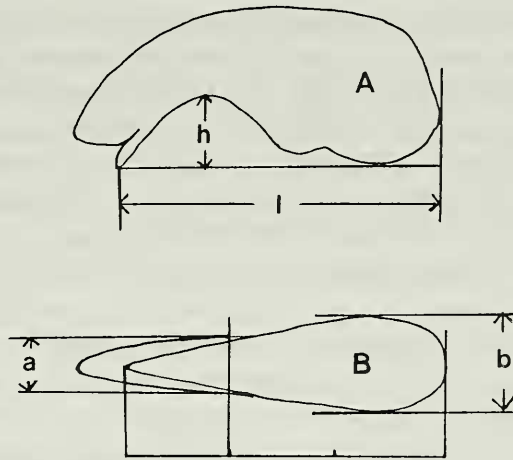


Fig. 1. General form of the central lobe of a *Coprochara* aedeagus in lateral (A) and ventral (B) view. The measurements indicated are:  $l$  = length,  $h$  = height of arch,  $a$  = width of neck;  $b$  = width of bulb: narrowing factor =  $a/b$  (see text).

### Identity of species

In arriving at identities for the species, I have relied on the key provided by Lohse (1989) but I have also, through the kindness of Mr P.M. Hammond, British Museum, Natural History, had the benefit of his knowledge in this area and the opportunity to examine material in the British Museum.

**SPECIES A.** Using the key provided by Lohse (1989), examples of species A ran to *A. pustulata* (L.) which I take to be their identity. As far as external features go, the terminal joints of the antennae are more transverse than in *brundini* Bernhauer and the elytral punctures are not rugose. The absence, in species A, of impressions on the dorsum of the pronotum containing the rows of punctures and the presence of sharply defined elytral spots, obliquely arranged yellow hairs at the sutural angle of the elytra and a weakly angled rear edge of the last sternite in the males do not fit with the characters given in the key for *binotata* Kraatz. The absence of impressions on the pronotum and the ratio of head breadth to pronotal breadth of less than 0.7 indicates that species A is not *pauxilla* (Mulsant & Rey).

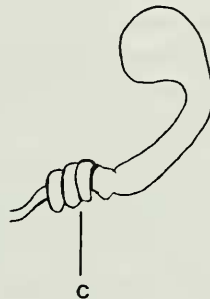


Fig. 2. General form of a *Coprochara* spermatheca:  $c$  = coil in duct (in this instance with three turns).

The central lobe of the aedeagus in species A is relatively long and weakly arched (see table) and matches well the central lobes figured for *bipustulata* by Strand & Vik (1968), Welch (1969) and Lohse (1989) as well as those of specimens in the British Museum standing above that name. In addition, the spermathecae in all nine females have coils with few turns, in keeping with coils figured by Strand & Vik (1968) and Lohse (1989) whereas *binotata*, *pauzilla* and *verna* have coils with many turns. It should be noted that the figure for the spermatheca of *bipustulata* given by Likovsky (1974) shows a coil with about 15 turns but I have assumed that this is a very exceptional case. Welch (1969) also depicts for *bipustulata* a spermatheca with a coil of many turns though he states that it is more usual in this species for the spermatheca to have a coil with two or three turns.

My specimens of *bipustulata* are from various habitats, mostly dung, and are from vice-counties West Cornwall, South Devon, North Devon, Dorset, Surrey, Haddington, Elgin and Easternness, taken over the years 1975 to 1983.

**SPECIES B.** In Lohse's key, these specimens run down to *verna* Say which I take to be their identity. They do not display appropriate external characters for any of the species in the key above *bipustulata* and *verna* and, as far as concerns external features mentioned in the key, the smaller red spot on the elytra indicates the latter. The presence of distinct micro-punctuation on the pronotum, virtually absent in *bipustulata*, and the round punctures on the elytra compared with the weakly crescent-shaped puncture on *bipustulata*, are additional distinguishing features.

As far as genitalia go, the central lobe of species B in lateral view would fit either of the figures given by Lohse for *binotata* and *verna* respectively, being more highly arched, i.e. with a higher arch/length ratio than in *bipustulata*. On ventral view, however, the central lobe towards the apex is quite wide whereas in *binotata* it is much narrower than across the bulb. The weakly fusiform coil with many turns in the spermathecal duct of species B agrees with that depicted by Lohse (1989). Additionally, species B agrees very well with North American examples of *verna* in the British Museum and with the description of this species and of its genitalia provided by Klimaszewski (1984).

Five of my examples of *verna* were taken under rotting sea-weed lying above high tide mark on the shore line near Tarbet, Outer Hebrides, in July 1976. The sixth (a female) came from a similar habitat on the Isle of Coll, Inner Hebrides, in July 1975.

**SPECIES C.** In all respects but size, these specimens have external characters agreeing with those cited by Lohse (1989) for *pauzilla*. The impressions holding the rows of punctures on the dorsum of the pronotum are particularly noticeable in most specimens and have the effect of making the unpunctured central area appear elevated, especially towards the base. These impressions and the relatively broad heads exclude (if this is



required) *bipustulata* and *verna*. The form of the antennae and the sculpture of the elytra exclude *brundini*.

In species C, the apex of the central lobe of the aedeagus is relatively wide and the spermathecal coil is weakly fusiform; these two features effectively exclude *binotata*. There are no other species of *Coprochara* with red elytral spots recognised from Central Europe (Lohse 1989) or from Scandinavia or Denmark (Silfverberg 1979) and the characters of species C do not fit any of the six species of *Coprochara* found in North America (Klimaszewski 1984).

Seven of the specimens (five males and two females) of this species were taken in deer dung in Richmond Park, Surrey in August 1980 (1) and in August 1983 (6), and two males were extracted from flood debris at Haysden, Kent in February 1990. One of the males from Haysden lacks a clear red spot on the elytra but is otherwise indistinguishable from the other six males.

### Discussion

It is perhaps not surprising that the commonest species in my material should be the species which has long been regarded as occurring here — *A. pustulata*. In general, authors are agreed on the characters of this species though one question still to be settled is how often the spermatheca in this species has a coil with many turns as depicted by Welch (1969) and by Likovsky (1974).

Though *verna* was described originally from Missouri, USA (Say 1939), it has been regarded as a species occurring in Europe by a number of workers including Horion (1967), Strand & Vik (1968) and Likovsky (1974). It seems likely however, that many European records for *verna* refer to *binotata* Kraatz. The confusion is illustrated by the way in which various workers have depicted genitalia. In *verna*, the central lobe of the aedeagus on ventral view is relatively wide towards the apex whereas that in *binotata* is markedly narrowed; the spermatheca in *verna* has a relatively narrow, fusiform coil whereas in *binotata* the coil is wide, approaching a spherical shape (Klimaszewski 1984, Lohse 1989). As they stand, the shapes of the central lobe and spermatheca figured for “*verna*” by Strand & Vik, suggests that these authors had not appreciated the existence of *binotata* in northern Europe and had unknowingly provided figures for *binotata*. Welch (1968) likewise figured for “*verna*” a spermathecal coil with multiple turns forming “a more or less spherical mass”, which indicates that he was, in fact, dealing with *binotata* (Welch 1969). I have examined what appear to be the four specimens from the Cameron collection in the British Museum to which Welch referred and find that these too are *binotata*.

While many European records for *verna* are thus likely to refer to *binotata*, it should be noted that Klimaszewski (1984) detected examples of

the true *verna* in European material which he examined and concluded that *verna* was, in fact, a holarctic species rather than a nearctic species introduced into Europe and elsewhere. Lohse (1989) records the presence of the true *verna* from Hamburg and Lubeck.

Since that the specimen reported by Welch (1969) has turned out to be *binotata*, the latter species must be added to the British list. At the same time my findings re-introduce *verna* as British.

The identity of the third species as *pauxilla* (Mulsant & Rey) can, at this stage, only be taken as provisional. Likovsky (1974) gives a length range for *pauxilla* of 1.5 to 2 mm while Lohse (1989) gives a slightly larger size — 1.8 to 2.5 mm. My specimens are clearly much longer than either of these ranges but whether they comprise exceptionally large examples of *pauxilla*, perhaps because their host in Britain is different from elsewhere, or another species requires the acquisition and examination of further material. Whatever the situation, the species does not appear to have been noted as British hitherto.

### Acknowledgements

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